

Assignment #2

Question 1.6 - Stealers, study component

In a study of the relationship between socio-economic class and unethical behavior, 129 University of California undergraduates at Berkeley were asked to identify themselves as having low or high social-class by comparing themselves to others with the most (least) money, most (least) education, and most (least) rejected jobs. They were also presented with a jar of individually wrapped candies and informed that the candies were for children in a nearby laboratory, but that they could take some if they wanted. After completing unrelated tasks, participants reported the number of candies they had taken.

- Identify the main research question of the study: ***what is the relationship between socio-economic class and unethical behavior?***
- Who are the subjects in this study? And how many are included? ***129 University of California undergraduates at Berkeley***
- The study found that the students who were identified as upper-class took more candy than others. How many variables were recorded for each subject in the study in order to conclude these findings? State the variables and their types:

Answer: ***There are 2 variables in this study***

- + ***Social-class: ordinal variables***
- + ***Candy has taken: numerical discrete variables***

Question 1.22 - Stressed out, Part I

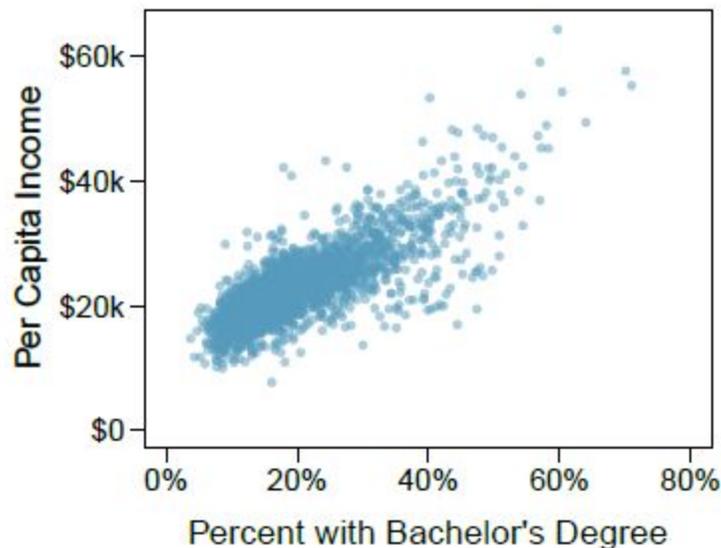
A study that surveyed a random sample of otherwise healthy high school students found that they are more likely to get muscle cramps when they are stressed. The study also noted that students drink more coffee and sleepless when they are stress.

- What type of this study? ***This is an observational study***
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- Can this study be used to conclude a causal relationship between increased stress and muscle cramps? **No - it's not recommended to use an observational study to make a conclusion about a causal relationship**
 - State possible confounding variables that might explain the observed relationship between increased stress and muscle cramps: **Number of working hours and deadline can be possible confounding variables to explain the observed relationship between increased stress and muscle cramps. Lots of working to meet the expected deadline can make students drink more coffee and sleepless nights, sitting too long to work can cause muscle cramps.**

Question 1.40 - Income and education in US counties

The scatterplot below shows the relationship between per capita income (in thousands of dollars) and percent of the population with a bachelor's degree in 3143 counties in the US in 2010.



- What are the explanatory and response variables? **The explanatory variable is Percent with Bachelor's Degree (x-axis) and the response variable is Per capita income (y-axis).**
- Describe the relationship between the two variables. Make sure to discuss unusual observations, if any: General observation and trend can be seen where there is a

linear relationship between the two variables an increase in per capita income affect the percent of bachelor's degree earned. Unusual observations can be detected when per capita income is more than 50k, we do not see lots of cases here.

- c. Can we conclude that having a bachelor's degree increases one's income? **No - this is an observational study we can not give a causal relationship**